

What is claimed is:

1     **1.**     A geodesic structure comprising a plurality of hub elements, each hub  
2     element having a vertex at a first end and a hub base at a second end that is  
3     opposite said first end, an angular deficit  $\alpha$ , wherein said hub elements are  
4     randomly arranged adjacent to one another so as to form said geodesic structure.

1     **2.**     The geodesic structure of **Claim 1**, wherein said hub element is a right  
2     cylindrical cone, and wherein, in an orthogonal elevational view of said hub element,  
3     said vertex connects a first hub side and a second hub side,

4             wherein an external angle  $\theta$  is formed between said second hub side and a  
5     first imaginary line extending straight from said first hub side beyond said vertex,  
6     and

7             wherein an internal angle  $\beta$  is formed between a second imaginary line that  
8     extends vertically from said vertex toward said base and either one of said first hub  
9     side or said second hub side.

1     **3.**     The geodesic structure of **Claim 2**,

2             wherein said geodesic structure has an angle of structure that is a function of  
3     said angular deficit  $\alpha$ .

1     **4.**     The geodesic structure of **Claim 3**, wherein said angle of structure is equal to  
2     an average value of said external angle  $\theta$  of all said hub elements.

1     **5.**     The geodesic structure of **Claim 4**, wherein said plurality of hub elements  
2     includes at least one group of elements that are identical in size and said angle of  
3     structure is equal to an average value of said external angle  $\theta$  of all said hub  
4     elements.

1     **6.**     The geodesic structure according to **Claim 4**, wherein said plurality of hub  
2     elements includes more than one group of hub elements and said hub elements  
3     within each group are identical in size, and wherein said angle of structure is equal

to an average value of said external angle  $\theta$  of all of said hub elements in said geodesic structure.

7. The geodesic structure according to **Claim 6**, wherein said plurality includes two groups of hub elements and said hub elements are arranged in an alternating pattern.

8. The geodesic structure according to **Claim 1** further comprising a virtual strut having a strut length, said virtual strut extending as a straight line between any two adjacent vertexes of said hub elements.

9. The geodesic structure according to **Claim 1**, wherein said structure is a semi-spherical dome.

10. The geodesic structure according to **Claim 1**, wherein said structure is a sphere.

11. The geodesic structure according to **Claim 1**, wherein said structure represents a map of a spherical body.

12. The geodesic structure according to **Claim 11**, wherein said map is a globe.

13. The geodesic structure according to **Claim 12**, wherein said map is a flat, two-dimensional representation of said spherical body.

14. The geodesic structure according to **Claim 1**, wherein said hub element is a cone.

15. The geodesic structure according to **Claim 14**, wherein said cone is fabricated of sheet material from the group consisting of metals, paper fiber products, wood fiber products, plastics, woven materials, pressed materials, and coated materials.

1     **16.**     The geodesic structure according to **Claim 15**, wherein said hub elements  
2     are arranged in an overlapping fashion so as to provide a closed surface.

1     **17.**     The geodesic structure according to **Claim 1**, wherein said hub element is a  
2     tensegrity element composed of a rigidly flexible compression component and a  
3     tension component.

1     **18.**     The geodesic structure according to **Claim 17**, wherein said compression  
2     component is a frame of rigidly flexible material, formed of two or more long slender  
3     compression elements that are placed cross-wise over each other, with ends of said  
4     compression elements extending outward, and said tension component is a chord  
5     forming an outer perimeter of said tensegrity element and forcing said frame into a  
6     convex-concave shape by applying a compression force on said ends of said  
7     compression elements.

1     **19.**     The geodesic structure according to **Claim 18**, wherein said compression  
2     component is formed of three long slender compression elements placed cross-wise  
3     over each other so as to form a hexagonal shape.

1     **20.**     The geodesic structure according to **Claim 19**, wherein said ends of said  
2     tensegrity element are connected to corresponding ends of adjacent tensegrity  
3     elements.

1     **21.**     The geodesic structure according to **Claim 20** further comprising a skin that  
2     covers said hub elements to form an enclosed space with said geodesic structure.

1     **22.**     The geodesic structure according to **Claim 1**, wherein said hub element is a  
2     truncated cone

1     **23.**     The geodesic structure according to **Claim 1**, wherein said hub element is a  
2     three-sided tapered hollow element.